Center Independent Research & Development: GSFC IRAD

Time variable gravity measurements using a satellite constellation

Completed Technology Project (2014 - 2015)

Project Introduction

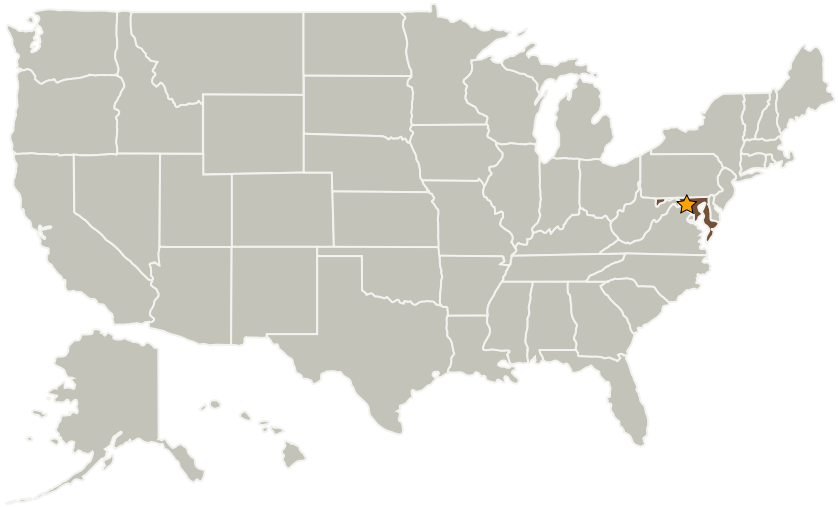
Improvements in the spatiotemporal resolution of time variable gravity (TVG) modeling are of primary importance for many science applications. Our goal is to demonstrate that small satellite constellations coupled with precise laser ranging can provide a low-cost path for improving measurements of the Earth's TVG field.

Our goal is to demonstrate that small satellite constellations coupled with precise laser ranging can provide an improvement in the recovery of the large-scale components of the earth's time variable gravity field as a scalable, low-cost and complimentary addition to future dedicated gravity missions.

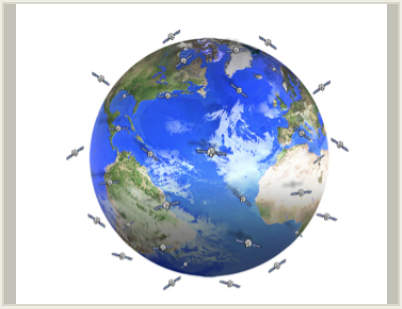
Anticipated Benefits

Provide observations of the Earth's time variable gravity field to benefit future dedicated gravity missions.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland



SmallSat Constellation

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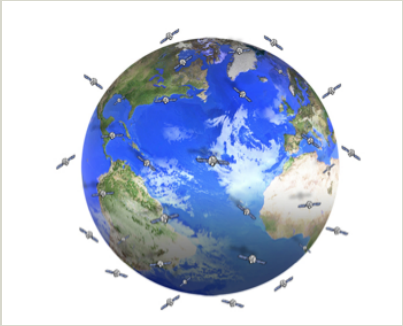
Primary U.S. Work Locations
Maryland

Images



SmallSat Constellation
SmallSat Constellation
(https://techport.nasa.gov/image/4175)

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

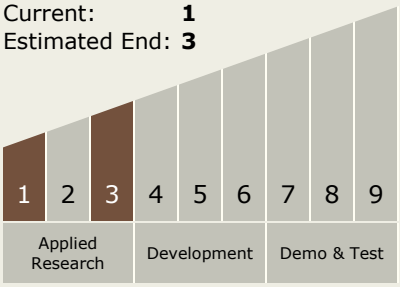
Matthew J Mcgill

Principal Investigator:

Scott B Luthcke

Technology Maturity (TRL)

Start: **1**
Current: **1**
Estimated End: **3**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.4 Decompression Sickness Mitigation